

Xinyun Cao

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Research Interest

Help make new digital media like Mixed Reality intuitive, efficient and accessible, as well as utilizing the power of new media for new accessibility technologies.

Education

PhD - University of Michigan, Ann Arbor 2023/8-now

- ❖ Program: Computer Science Engineering
- ❖ Advisor & Lab: Prof. Dhruv Jain, Accessibility Lab

Bachelor's - University of California, Berkeley 2018/8-2022/5

- ❖ Majors: Computer Science, Cognitive Science. Minor: Music
- ❖ Cum. GPA: 3.972 / 4.000.
- ❖ Honors in Computer Science, **High Distinction** in General Scholarship.
- ❖ Honors Thesis: *Split Embodiment Interactions*, Mentored by Bjoern Hartmann and James Smith.
- ❖ Honors to Date in 7 out of 7 semesters, **Dean's List** in 4 out of 7 semesters.

Submitted Manuscripts

Dual Body Bimanual Interaction in Immersive Environments

- ❖ Authors: James Smith, Xinyun Cao, Bjoern Hartmann.
- ❖ Submitted to Review for DIS 2023.

Teaching Experience

Undergraduate Student Instructor - Intro to Computer Graphics, UC Berkeley 2022/1-2022/5

- ❖ Taught discussion sessions of 10+ students and hosted exam review sessions.
- ❖ Answered questions during office hours and on the class forum.
- ❖ Helped develop class projects about Rasterization, Mesh Geometry, and Particle Simulation.
- ❖ Reviewed and scored open-ended final projects.

Research Experience

Undergraduate Researcher - Berkeley Institute of Design 2021/1-2022/5

- ❖ Mentored by Prof. Bjoern Hartmann and Ph.D. Student James Smith.
- ❖ Explored how VR can improve the prototyping process by reading related papers.
- ❖ Participated in the Engineering Design Scholar program and implemented VR programs to explore how modifying VR avatars can lead to design insight.
- ❖ Proposed Dual Body Bimanual Interaction in VR, wrote a VR program in Unity 3D as an artifact, and conducted user studies. Finished an Honors Thesis and a research paper submitted to ACM CHI.

Undergraduate Researcher - Tetrachromacy 2021/8-2021/12

- ❖ Mentored by Ren Ng for the Computational Color graduate-level course.
- ❖ Worked on a project analyzing the mathematical and biological model of tetrachromacy to study its color space.
- ❖ Proposed a new color-matching pipeline and used PCA and hyperspectral dataset to find the basis for a Four Color Opponency system.

Undergraduate Researcher - ROAR VR 2020/9-2020/12

- ❖ Mentored by Allen Yang for the Immersive Computing and Virtual Reality graduate-level course.
- ❖ Worked on the ROAR (Robot Open Autonomous Racing) VR project.
- ❖ Implemented and tested localization functionalities for a small car with an intel Realsense camera using

OpenCV and Python.

- ❖ Built a virtual city using C# (Unity) to overlap images collected by car mount cameras, and export them into VR.

Honors and Scholarships

Berkeley EECS Honors Program - Class of 2022

Berkeley Engineering Design Scholar - Summer 2021 Cohort

Upsilon Pi Epsilon (Computer Science Honor Society) - Initiated Fall 2019

Professional Experience

Software Engineer (Mobile) - NimbleRX

2022/8-now

- ❖ Developed a patient-facing mobile app for a pharmacy platform, accumulating 200k+ downloads.
- ❖ Utilize Dart (Flutter), HTML API and various Flutter packages like Retrofit to optimize code and communicate with other systems.
- ❖ Worked with Content Management Systems like Sanity and Mux to store and retrieve client facing content.
- ❖ Implemented the design of a new navigation mechanism for the app using GoRouter.
- ❖ Participated in design review and code review, produced demo and organized playtest. Gained working knowledge with the software development lifecycle.

Software Engineer - Pocket Gems (Adventure Chef)

2021/6-2021/12

- ❖ Developed game features in C# (Unity) and implemented gameplay debug tools for developers.
- ❖ Migrated a large number of parameters from Unity Editor to CSV files automatically using editor scripting.
- ❖ Made builds in Jenkins, participated in company playtests, and gave constructive feedback.

Software Developer - Geopogo

2020/4-2020/8

- ❖ Implemented User Interface, login, and session system of a cooperative VR building software using C# (Unity).
- ❖ Incorporated Identification system with Amazon Cognito and multiplayer network using Amazon GameLift.

Personal Projects

Designer, Developer - Gesture-Music Interface

2020/11

- ❖ Made a hand gesture-music interface built-in Python and Max MSP.
- ❖ Implemented with OpenCV computer vision module and PyOSC port.

Designer, Developer - Cognitive Training in VR Environment

2019/8-2020/5

- ❖ Researched by reading paper about Cognitive Training for Traumatic Brain Injury patients.
- ❖ Developed a Dichotic Listening Training Program in VR using C# (Unity).

Developer - GAN Image Noise Cancellation

2019/5-2019/8

- ❖ Learned about different Machine Learning deep neural network structures.
- ❖ Designed and implemented a model using a Generative Adversarial Network in Python using Tensorflow.
- ❖ Generated a data set, trained the model, and achieved a product that performs noise cancellation on images.

Activities

External VP, Internal VP, Social Chair/ Upsilon Pi Epsilon (CS Honor Society)

2019/12-2022/5

- ❖ Planned and organized social events to foster the CS community. Trained new members.
- ❖ Held academic office hours, academic advising sessions, resume critiques, and mock interviews.

Skills

Programming: Python, Dart, Java, C#, C++, C, React Native, SQL.

Technology: Git, Unity, OpenCV, Tensorflow, Maya, Adobe Audition, Max MSP.

Language: Chinese (Native), English (Fluent)